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10/806,353	03/23/2004	Shunpei Yamazaki	740756-2721	3995

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EXAMINER	
HARRISON, MONICA D	

ART UNIT	PAPER NUMBER
2813	

DATE MAILED: 03/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/806,353	YAMAZAKI ET AL.	
	Examiner	Art Unit	
	Monica D. Harrison	2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's request for continued examination filed 10/11/05 has been entered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-44 are rejected under 35 U.S.C. 102(e) as being anticipated by Ohtani et al (6,545,359 B1).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

2. Regarding claim 1, Ohtani et al discloses a method for manufacturing a semiconductor device comprising the steps of: forming an organic insulating film (Figure 1C, reference 111); forming an opening portion in the organic insulating film (Figure 1C); forming a conductive film which serves as a barrier over the organic insulating film and in the opening portion (Figure 1C, reference 106a); forming a second conductive film including aluminum so as to be in contact with the first conductive film (Figure 1C, reference 106b); flattening a surface of

the second conductive film by selectively performing a heat treatment under reduced pressure or in normal pressure (column 9, lines 51-67) and forming a third conductive film in contact with the second conductive film (Figure 1C, reference 106c).

3. Regarding claim 2, Ohtani et al discloses wherein from the steps of forming the first and the second conductive film to the steps of selectively performing the heat treatment is sequentially carried out without being exposed to atmosphere (column 9, lines 51-67).

4. Regarding claim 3, Ohtani et al discloses wherein irradiation of light from ultraviolet to infrared by a lamp is used as the selective heat treatment (column 13, lines 54-59).

5. Regarding claim 4, Ohtani et al discloses wherein gas laser irradiation or solid-state laser irradiation which performs pulsed oscillation or continuous oscillation is performed as the selective heat treatment for the second conductive film (column 13, lines 59-63; column 17, lines 26-36).

6. Regarding claim 5, Ohtani et al discloses wherein the organic insulating film includes one kind selected from acryl, polyimide, polyamide, polyimidamide, epoxyacryl, benzocyclobutene, parylene and flare (column 17, lines 42-46).

7. Regarding claim 6, Ohtani et al discloses wherein the organic insulating film includes a skeleton structure with a bond of silicon (Si) and oxygen (O) and includes at least hydrogen in the substituent or a film at least including a kind of a fluorine, an alkyl group, and aromatic hydrogen in the substituent (column 17, lines 63-67 thru column 18, lines 1-3).

8. Regarding claim 7, Ohtani et al discloses wherein a film including titanium, tantalum, tungsten or silicon is formed as the first conductive film (column 15, lines 15-18).

9. Regarding claim 8, Ohtani et al discloses wherein the third conductive film includes one kind or plural kinds of element selected from germanium, tin, gallium zinc, lead, indium or scandium.

10. Regarding claim 9, Ohtani et al discloses a method for manufacturing a semiconductor device comprising the steps of forming an organic insulating film (Figure 1C, reference 111); forming an opening portion in the organic insulating film (Figure 1C); forming a nitride film so as to be in contact with the organic insulating film and in the opening portion (Figure 1C, reference 102); patterning the nitride film so that a layer under the organic insulating film is expose in the opening portion (column 13, lines 4-23); forming a first conductive film which serves as a barrier so as to be in contact with the nitride film and the exposed portion of the layer (Figure 2C, reference 207a); forming a second conductive film including aluminum so as to be in contact with the first conductive film (Figure 2C, reference 207b) and; flattening a surface of the second conductive film by selectively performing a heat treatment under reduced pressure or in normal pressure (column 16, lines 1-32).

11. Regarding claim 10, Ohtani et al discloses wherein from the steps of forming the first and the second conductive film to the steps of selectively performing the heat treatment is sequentially carried out without being exposed to atmosphere (column 9, lines 51-67).

12. Regarding claim 11, Ohtani et al discloses wherein irradiation of light from ultraviolet to infrared by a lamp is used as the selective heat treatment (column 13, lines 54-59).

13. Regarding claim 12, Ohtani et al discloses wherein gas laser irradiation or solid-state laser irradiation which performs pulsed oscillation or continuous oscillation is performed as

the selective heat treatment for the second conductive film (column 13, lines 59-63; column 17, lines 26-36).

14. Regarding claim 13, Ohtani et al discloses wherein the organic insulating film includes one kind selected from acryl, polyimide, polyamide, polyimidamide, epoxyacryl, benzocyclobutene, parylene and flare (column 17, lines 42-46).

15. Regarding claim 14, Ohtani et al discloses wherein the organic insulating film includes a skeleton structure with a bond of silicon (Si) and oxygen (O) and includes at least hydrogen in the substituent or a film at least including a kind of a fluorine, an alkyl group, and aromatic hydrogen in the substituent (column 17, lines 63-67 thru column 18, lines 1-3).

16. Regarding claim 15, Ohtani et al discloses wherein a film including titanium, tantalum, tungsten or silicon is formed as the first conductive film (column 15, lines 15-18).

17. Regarding claim 16, Ohtani et al discloses forming a third conductive film over the second conductive film (Figure 2C, reference 207c); wherein the third conductive film includes one kind or plural kinds of element selected from germanium, tin, gallium, zinc, lead, indium, or scandium (column 21, lines 42-43).

18. Regarding claim 17, Ohtani et al discloses a method for manufacturing a semiconductor device comprising the steps of forming an organic insulating film (Figure 1C, reference 111); forming a first conductive film on the organic insulating film and in the opening portion (Figure 1C, reference 106a); forming a second conductive film including aluminum on the first conductive film and in the opening (Figure 1C, reference 106b); and flattening a surface of the second conductive film by performing a heat treatment under reduced pressure or in normal pressure (column 9, lines 51-67).

19. Regarding claim 18, Ohtani et al discloses wherein from the steps of forming the first and the second conductive film to the steps of performing the heat treatment is sequentially carried out without being exposed to atmosphere (column 9, lines 51-67).

20. Regarding claim 19, Ohtani et al discloses wherein irradiation of light from ultraviolet to infrared by a lamp is used as the selective heat treatment (column 13, lines 54-59).

21. Regarding claim 20, Ohtani et al discloses wherein gas laser irradiation or solid-state laser irradiation which performs pulsed oscillation or continuous oscillation is performed as the selective heat treatment for the second conductive film (column 13, lines 59-63; column 17, lines 26-36).

22. Regarding claim 21, Ohtani et al discloses wherein the organic insulating film includes one kind selected from acryl, polyimide, polyamide, polyimidamide, epoxyacryl, benzocyclobutene, parylene and flare (column 17, lines 42-46).

23. Regarding claim 22, Ohtani et al discloses wherein the organic insulating film includes a skeleton structure with a bond of silicon (Si) and oxygen (O) and includes at least hydrogen in the substituent or a film at least including a kind of a fluorine, an alkyl group, and aromatic hydrogen in the substituent (column 17, lines 63-67 thru column 18, lines 1-3).

24. Regarding claim 23, Ohtani et al discloses wherein a film including titanium, tantalum, tungsten or silicon is formed as the first conductive film (column 15, lines 15-18).

25. Regarding claim 24, Ohtani et al discloses forming a third conductive film over the second conductive film (Figure 2C, reference 207c); wherein the third conductive film includes one kind or plural kinds of element selected from germanium, tin, gallium, zinc, lead, indium, or scandium (column 21, lines 42-43).

26. Regarding claim 25, Ohtani et al discloses a method for manufacturing a semiconductor device comprising the steps of forming an organic insulating film (Figure 1C, reference 111); forming an opening portion in the organic insulating film (Figure 1C); forming a nitride film on the organic insulating film and in the opening portion (Figure 1C, reference 102); patterning the nitride film so that a layer under the organic insulating film is exposed in the opening portion (column 13, lines 4-23); forming a first conductive film on the nitride film and the exposed portion of the layer (Figure 1C, reference 106a); forming a second conductive film including aluminum on the first conductive film and in the opening portion (Figure 1C, reference 106b); and flattening a surface of the second conductive film by performing a heat treatment under reduced pressure or in normal pressure (column 9, lines 51-67).

27. Regarding claim 26, Ohtani et al discloses wherein from the steps of forming the first and the second conductive film to the steps of performing the heat treatment is sequentially carried out without being exposed to atmosphere (column 9, lines 51-67).

28. Regarding claim 27, Ohtani et al discloses wherein irradiation of light from ultraviolet to infrared by a lamp is used as the selective heat treatment (column 13, lines 54-59).

29. Regarding claim 28, Ohtani et al discloses wherein gas laser irradiation or solid-state laser irradiation which performs pulsed oscillation or continuous oscillation is performed as the selective heat treatment for the second conductive film (column 13, lines 59-63; column 17, lines 26-36).

30. Regarding claim 29, Ohtani et al discloses wherein the organic insulating film includes one kind selected from acryl, polyimide, polyamide, polyimidamide, epoxyacryl, benzocyclobutene, parylene and flare (column 17, lines 42-46).

31. Regarding claim 30, Ohtani et al discloses wherein the organic insulating film includes a skeleton structure with a bond of silicon (Si) and oxygen (O) and includes at least hydrogen in the substituent or a film at least including a kind of a fluorine, an alkyl group, and aromatic hydrogen in the substituent (column 17, lines 63-67 thru column 18, lines 1-3).

32. Regarding claim 31, Ohtani et al discloses wherein a film including titanium, tantalum, tungsten or silicon is formed as the first conductive film (column 15, lines 15-18).

33. Regarding claim 32, Ohtani et al discloses forming a third conductive film over the second conductive film (Figure 2C, reference 207c); wherein the third conductive film includes one kind or plural kinds of element selected from germanium, tin, gallium, zinc, lead, indium, or scandium (column 21, lines 42-43).

34. Regarding claim 33, Ohtani et al discloses a method for manufacturing a semiconductor device comprising the steps of forming an organic insulating film (Figure 1C, reference 111); forming an opening portion in the organic insulating film (Figure 1C); forming a first conductive film so as to be in contact with the organic insulating film and in the open portion (Figure 1C, reference 106a); forming a second conductive film including aluminum so as to be in contact with the first conductive film (Figure 1C, reference 106b) and; flattening a surface of the second conductive film by selectively performing a laser irradiation which performs pulsed oscillation or continuous oscillation under reduced pressure or in normal pressure (column 9,lines 51-67; column 13 lines 59-63).

35. Regarding claim 34, Ohtani et al discloses wherein from the steps of forming the first and the second conductive film to the steps of performing the laser irradiation is sequentially carried out without being exposed to atmosphere (column 9, lines 51-67).

36. Regarding claim 35, Ohtani et al discloses wherein the organic insulating film includes one kind selected from acryl, polyimide, polyamide, polyimidamide, epoxyacryl, benzocyclobutene, parylene and flare (column 17, lines 42-46).

37. Regarding claim 36, Ohtani et al discloses wherein the organic insulating film includes a skeleton structure with a bond of silicon (Si) and oxygen (O) and includes at least hydrogen in the substituent or a film at least including a kind of a fluorine, an alkyl group, and aromatic hydrogen in the substituent (column 17, lines 63-67 thru column 18, lines 1-3).

38. Regarding claim 37, Ohtani et al discloses wherein a film including titanium, tantalum, tungsten or silicon is formed as the first conductive film (column 15, lines 15-18).

39. Regarding claim 38, Ohtani et al discloses forming a third conductive film over the second conductive film (Figure 2C, reference 207c); wherein the third conductive film includes one kind or plural kinds of element selected from germanium, tin, gallium, zinc, lead, indium, or scandium (column 21, lines 42-43).

40. Regarding claim 39, Ohtani et al discloses a method for manufacturing a semiconductor device comprising the steps of forming an organic insulating film (Figure 1C, reference 111); forming an opening portion in the organic insulating film (Figure 1C); forming a nitride film so as to be in contact with the organic insulating film and in the opening portion (Figure 1C, reference 102); patterning the nitride film so that a layer under the organic insulating film is expose in the opening portion (column 13, lines 4-23); forming a first conductive film so as to be in contact with the nitride film and the exposed portion of the layer (Figure 1C, reference 106a); forming a second conductive film including aluminum so as to be in contact with the first conductive film (Figure 1C, reference 106b); and flattening a surface of the second conductive

film by selectively performing a laser irradiation which performs pulsed oscillation and continuous oscillation under reduced pressure or in normal pressure (column 9, lines 51-67; column 13, lines 59-63).

41. Regarding claim 40, Ohtani et al discloses wherein from the steps of forming the first and the second conductive film to the steps of performing the laser irradiation is sequentially carried out without being exposed to atmosphere (column 9, lines 51-67).

42. Regarding claim 41, Ohtani et al discloses wherein the organic insulating film includes one kind selected from acryl, polyimide, polyamide, polyimidamide, epoxyacryl, benzocyclobutene, parylene and flare (column 17, lines 42-46).

43. Regarding claim 42, Ohtani et al discloses wherein the organic insulating film includes a skeleton structure with a bond of silicon (Si) and oxygen (O) and includes at least hydrogen in the substituent or a film at least including a kind of a fluorine, an alkyl group, and aromatic hydrogen in the substituent (column 17, lines 63-67 thru column 18, lines 1-3).

44. Regarding claim 43, Ohtani et al discloses wherein a film including titanium, tantalum, tungsten or silicon is formed as the first conductive film (column 15, lines 15-18).

45. Regarding claim 44, Ohtani et al discloses forming a third conductive film over the second conductive film (Figure 2C, reference 207c); wherein the third conductive film includes one kind or plural kinds of element selected from germanium, tin, gallium, zinc, lead, indium, or scandium (column 21, lines 42-43).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica D. Harrison whose telephone number is 571-272-1959. The examiner can normally be reached on M-F 7:00am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on 571-272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Monica D. Harrison
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mdh
March 2, 2006

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